AD

10. (Amended) The modified serine hydrolase of claim 8, wherein said amino acid is selected from the group consisting of amino acid 156 in the S₁ subsite, amino acid 166 in the S₁ subsite, amino acid 217 in the S₁' subsite, amino acid 222 in S₁' subsite and amino acid 62 in the S₂ subsite.

11. (Amended) The modified serine hydrolase of claim 8, wherein said substituent is selected from the group consisting of an enantiomerically pure oxazolidinone, an enantiomerically pure indenone, and an enantiomerically pure phenyl-ethyl-thiol.

A3

13. (Amended) The modified serine hydrolase of claim 11, wherein said substitutent is selected from the group consisting of (R)-2-methoxy-2-phenyl-ethyl-thiol, (S)-2-methoxy-2-phenyl-ethyl-thiol, (R)-2-hydroxy-2-phenyl-ethyl-thiol, (S)-2-hydroxy-2-phenyl-ethyl-thiol, N-(3'-thio-propyl)-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-isopropyl-2-oxazolidinone, N-(3'-thio-propyl)-(S)-4-phenyl-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-phenyl-2-oxazolidinone, N-(3'-thio-propyl)-(S)-4-phenyl-2-oxazolidinone, N-(2'-thio-ethyl)-(R)-4-phenyl-2-oxazolidinone, N-(2'-thio-ethyl)-(S)-4-phenyl-2-oxazolidinone, N-(2'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(2'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio)-(3aR-cis)-3,3a,8,8a-tetrahydro-2H-indeno[1,2-d]-oxazol-2-one, and N-(3'-thio)-(3aS-cis)-3,3a,8,8a-tetrahydro-2H-indeno[1,2-d]-oxazol-2-one.

Ay

51. (Amended) A method of producing a chemically modified mutated serine hydrolase, said method comprising

providing a serine hydrolase, said hydrolase comprising an amino acid residue in a subsite replaced with a cysteine; and

modifying the cysteine by replacing the thiol hydrogen in the cysteine with a substituent group providing a thiol side chain comprising a chiral substituent.

AS

56. (Amended) The method of claim 53, wherein said amino acid is selected from the group consisting of amino acid 156 in the S_1 subsite, amino acid 166 in the S_1 subsite. amino acid 217 in the S_1 ' subsite, amino acid 222 in S_1 ' subsite and amino acid 62 in the S_2 subsite.

57. (Amended) The method of claim 53, wherein said substituent is selected from the group consisting of a chiral oxazolidinone, a chiral indenone, and a chiral phenyl-ethyl-thiol.

A6

59. (Amended) The method of claim 53, wherein said substituent is selected from the group consisting of (R)-2-methoxy-2-phenyl-ethyl-thiol, (S)-2-methoxy-2-phenyl-ethyl-thiol, (R)-2-hydroxy-2-phenyl-ethyl-thiol, (S)-2-hydroxy-2-phenyl-ethyl-thiol, N-(3'-thio-propyl)-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-isopropyl-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-phenyl-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-benzyl-2-oxazolidinone, N-(3'-thio-propyl)-(R)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(R)-4-phenyl-2-oxazolidinone, N-(2'-thio-ethyl)-(S)-4-phenyl-2-oxazolidinone, N-(2'-thio-ethyl)-(R)-4-benzyl-2-oxazolidinone, N-(2'-thio-ethyl)-(R)-4-benzyl-2-oxazolidinone, N-(2'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio)-(3aR-cis)-3,3a,8,8a-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio)-(3aR-cis)-3,3a,8,8a-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio)-(3aR-cis)-3,3a,8,8a-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio)-(3aR-cis)-3,3a,8,8a-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxazolidinone, N-(3'-thio-ethyl)-(S)-4-benzyl-2-oxaz